

# **Aerospace Engineer, GS- 0861-14**

## **AST- Aerospace Flight Systems, NCC: 725-12**

**Position Number:** GS05C02

**Introductory Statement:** The incumbent in this position serves as the Instrument Manager on a Program or Project within the Flight Programs and Projects Directorate. The work involves defining operational requirements, researching, developing, performing analysis, integrating, and evaluating aerospace and aeronautical flight systems, vehicles, and payloads as a part of the development of some or all aspects of flight systems or projects. Duties may also include monitoring contractors engaged in this work. The following major duty areas comprise tasks and duties directly related to AST-Aerospace Flight Systems work, NCC 725-12, as described in the AST Definition for that specialty level. The specialty knowledge described in the definition is needed to perform the duties of this job in addition to the knowledge described below.

### **Performs Technical Contractor Oversight of Aerospace Engineering Activities 50%**

Initiates contact and provides expert technical advice and direction to contractor professionals in areas such as flight systems, fluid and flight mechanics, the fabrication or composition of materials and structures, or propulsion and power. Serves as a senior technical contact and/or Contracting Officer's Technical Representative. Keeps the Contracting Officer informed on progress, proposed contract modifications, validity of claims, analysis of proposals, and assessment of contract time extensions.

Work complexities require the development of alternate solutions to reduce time and costs, versatility and innovation, and short cuts or compromises that are considered risky. Resolves unusual demands caused by extraordinary urgency, safety, or economic restraints. Performs additional data systems and analysis work.

### **Aerospace Engineering Project Management Work 25%**

Manages significant elements or phases of projects related to major agency functions, programs, or projects. Overcomes difficult and complex technical, project management, and organizational problems using innovative and original approaches. Plans, guides, coordinates, and manages the work of subordinate, secondary, and matrixed resources engaged in accomplishing the missions and functions of the organization. Performs periodic review and analysis to assess achievement of major goals. Provides engineering analysis for special projects, future projects, and in advance planning of new systems and capabilities of all applicable agency programs and areas of concern and responsibility. Participates in preliminary and critical design reviews and determines, develops, and defends requirements. Responsible for operation, maintenance, and sustaining engineering planning and execution.

### **Aerospace Engineering Technology Development & Design 15%**

Directs a broad range of inter-disciplinary aerospace engineering development and design activities. Makes recommendations and implements actions involving highly complex aerospace engineering technical problems, including those that apply to controversial or unusual integrated systems. Defines unknown conditions, resolves critical problems, or develops new theories. Directs critical design projects. Determines when major development should be stopped or major alterations made due to changes in programs. Plans and

should be stopped or major alterations made due to changes in programs. Plans and establishes overall outline for design and development of proposed technology, equipment, or systems. Serves as liaison between research, design, and operations. Projects affect the work of other experts and the development of major parts of projects.

**Performs Aerospace Engineering Studies and Analyses 10%**

Conducts conceptual definition studies and complex detailed analyses to establish preliminary designs and alternatives for a variety of advanced systems on proposed new projects for which no precedents are available. Contributes inventions, new designs, or techniques that are of material significance in the solution of important applied problems with unprecedented or novel aspects. Originates and establishes unique methods and applications that provide innovative solutions to complex engineering issues. Develops and redefines original concepts for advanced technologies, systems, equipment, facilities, or vehicles.

Identifies alternative approaches or compromises to develop the most cost effective technical solutions. Ensures compatibility with overall study objectives and schedules. Integrates various study and analysis results into comprehensive technical briefings, reports, and technical papers. Provides technical advice in area of specialization both within and outside the organization.

Anticipates changes in data management and analysis requirements. Ensures that data models are capable of responding to changing requirements. Adapts analysis methods and approaches to meet the unique requirements of an assignment.

**OTHER SIGNIFICANT FACTS:**

Position requires overnight travel 6-10 nights per month.

In order to qualify for this position, incumbent must possess a bachelor's degree appropriate to the position.

Performs other duties as assigned.

Serves as Contracting Officer Technical Representative (COTR).

Serves as technical liaison between the contractor and the Contracting Officer by monitoring the contractor's performance and delivery of the final products and/or services under the contract.

Assures technical proficiency and compliance with the technical provisions of the contract by reviewing and verifying the performance of work by the contractor.

Ensures the contractor complies with the defined Statement of Work or specifications included in the contract. Assists the contractor and the Contracting Officer in interpreting technical requirements of the contract scope of work or specifications.

Reviews and evaluates the contractor's progress related to expenditures, and recommends approval/disapproval for payment as appropriate.

Recommends and justifies changes desired in scope and/or technical provisions of the contract.

### **Factor 1- 8 Knowledge Required by the Position**

The position requires a mastery of the concepts and principles of aerospace engineering to resolve novel or obscure problems; extend and modify techniques; develop new approaches that guide other engineers who solve a variety of technical problems; and/or apply new, innovative, or experimental aerospace engineering theories, developments, or practices to problems or studies not susceptible to treatment by acceptable methods.

- a. A BS degree in an appropriate field of engineering, physical science, or mathematics is required to apply the professional theories, practices, principles, concepts and techniques of aerospace technology to plan, develop, and implement instrument systems.
- b. Expert knowledge of advanced concepts, principles, and practices used to develop various instruments that will enable the Instrument Manager to plan, define, and conduct studies or direct the efforts of other professionals in the development of instruments.
- c. Extensive knowledge relating to aerospace instrument design, development, fabrication, test, calibration, and development of performance and test specifications.
- d. Ability to analyze and translate various engineering and scientific objectives as they affect/relate to the development, design and testing of instruments.
- e. Knowledge of spacecraft, spacecraft subsystems, ground systems, and software systems technology are required to properly interface the instruments and/or future instruments to the spacecraft.
- f. Ability to analyze and evaluate instrument performance to identify critical or potential problem areas, prepare plans and conduct or direct studies for resolution of problems or technical difficulties associated with the performance parameters.
- g. Ability to conduct or direct technical studies and analyses of the overall instrument system to determine trade offs among various elements of the instrument for optimization of design which provides proper balance between instrument performance, reliability, and spacecraft compatibility.
- h. Ability to plan and organize work for technical management and instrument engineering.
- i. Ability to communicate in writing to prepare technical briefings, specifications, status reviews, and resource requirements.

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j. Ability to communicate orally for interface purposes and in making presentations, briefings, and status updates.

### **Factor 2- 5 Supervisory Controls**

The supervisor provides guidance solely in the form of general legislative, mission, or policy directions and resource constraints. The engineer typically initiates new projects or activities independently and keeps the supervisor informed of progress in planning, coordinating, and implementing the work and resolving conflicts. Recommendations and decisions of the engineer are accepted as technically sound even though final approval may depend on formal action by high-level management. The engineer has the highest degree of independence in seeking optimum technical or policy solutions to problems in the light of current engineering developments. Completed work is broadly reviewed for adherence to mission or legislative direction and for assurance that broad policy or program objectives are fulfilled.

### **Factor 3- 5 Guidelines**

Guidelines are basic legislation and/or broadly stated agency regulations and policy statements. At this level the engineer is a recognized technical authority in the interpretation of such broad guidelines, and must exercise considerable judgment and ingenuity in interpreting and adapting guides that exist; in developing new and improved hypotheses, concepts, or approaches not previously tested or reported; and/or in developing new policies that have the potential to take the organization (and the affected public) in new directions. The ideas, methods and procedures developed are on the cutting edge of technology and often serve as precedents for other scientists, engineers, or policy-makers within or outside the agency.

### **Factor 4- 5 Complexity**

Assignments are of such breadth, diversity, and intensity that they involve many varied and complex features, and typically contain a combination of complex features that involve serious or difficult to resolve conflicts between engineering and management requirements. The work requires originating innovative scientific/engineering techniques, establishing criteria and standards applicable to wide range of engineering problems and conditions, or developing new scientific concepts or approaches that advance the state-of-the-science.

### **Factor 5- 5 Scope and Effect**

The work includes the resolution of a broad range of critical or highly unusual engineering problems, development of innovative approaches or guides, or the determination of the effectiveness and validity of proposed or current policies and programs. The engineer serves as an expert advisor and consultant to officials and managers within or outside the agency on a broad range of engineering activities and broad policy issues.

### **Factor 6- 3 Personal Contacts**

Personal contacts include a wide range of professional and administrative personnel throughout the agency, at other federal agencies, in state and local government, private industry, academia, consumer advocacy groups, and in some cases the media and elected

industry, academia, consumer advocacy groups, and in some cases the media and elected officials.

**Factor 7- 4 Purpose of Contacts**

The purpose of contacts is to justify, defend, negotiate, or settle controversial and far-reaching matters through active participation in conferences, meetings or presentations. The persons contacted typically have diverse viewpoints, goals, or objectives, requiring the engineer to achieve a common understanding of the problem and a satisfactory solution by convincing others, arriving at a compromise, or developing suitable alternatives.

**Factor 8- 1 Physical Demands**

The work is primarily sedentary, although some physical effort may be required, e.g., walking, standing, carrying light items such as manuals or briefcases, or driving or traveling by motor vehicle.

**Factor 9- 1 Work Environment**

The work environment involves everyday risks or discomforts that require normal safety precautions typical of such places as offices, training rooms, and libraries. The work area is adequately lighted, heated, and ventilated. There may be occasional exposure to moderate risks or discomforts in storage areas or hazardous waste sites.